

the relative weight of the liver was 1-15; and the quantity of hepatine was 17.23 per cent. When they were fed upon animal food with an admixture of sugar, the relative weight of the liver to the body was 1-16½; and the amount of hepatine yielded was 14.5 per cent. Some experiments which Dr. Pavy records, that he has made upon rabbits, are strikingly corroborative of the deductions he has drawn from the observations on the dog.

If this hepatine is not naturally formed for the purpose of transformation into sugar, the question as to what naturally becomes of it, is most interesting. Dr. Pavy believes that in its solution attention will have to be specially directed to the bile and to the production of fat, a material which is undoubtedly largely formed, particularly under certain kinds of vegetable food, in the animal system.

XIII. *On Poisoning by Nicotina, with Remarks.* By ALFRED S. TAYLOR, M. D., F. R. S.

In this communication Dr. Taylor gives the history of a case where a gentleman committed suicide by nicotina, with an account of the manner in which this substance was sought for and detected in the body, and some very interesting considerations upon its action as a poison.

The only other case of poisoning by nicotina on record, is that which occurred about eight years ago in Belgium, where a M. Fouguies was murdered by the Count and Countess Bocarmé, his brother-in-law and sister, while dining with them in the chateau of Bitremont. In that instance, M. Stas conducted the chemical investigation, and succeeded in detecting the poison in small quantity in the tongue and fauces, stomach, liver, lungs, and in a wooden plank of the floor of the room in which the deceased was sitting.

In his case, in searching for the poison, Dr. Taylor made use of the plan pursued by M. Stas, and also of that advised by Orfila. By both nicotina was detected, but that of M. Stas enabled a greater quantity to be extracted.

As to the action of nicotina in destroying life, Dr. Taylor believes that the degree of purity of the nicotina employed may, in some measure, account for the different conclusions arrived at by experimenters, some finding it to act exclusively on the muscular system, while others contend that the circulation alone is directly affected. M. Bernard, it will be recollected, found that when pure it spent its effects chiefly on the capillary circulation, while, when partially decomposed, the functions of the heart and lungs were directly affected. (*Leçons sur l'Effet des Substances Toxiques et Médicamenteuses*, p. 397.)

This paper of Dr. Taylor, as all that he publishes of the kind, is of the highest importance in a medico-legal point of view. W. F. A.

ART. XX.—*A Treatise on the Human Skeleton—(including the Joints).*—By GEORGE MURRAY HUMPHRY, Esq., M. B. Cantab., F. R. C. S., Surgeon to Addenbrooke's Hospital, Lecturer on Surgery and Anatomy in Cambridge University Medical School. 8vo. p. 620: Cambridge, Macmillan & Co., 1858.

MR. HUMPHRY, in the preface to his work upon the Human Skeleton, informs us that it has always been to him a matter of regret, that the study of the bones should be regarded as dry and tedious. In reality it is, and ought to be, one of the most interesting of all studies, essential, as he remarks, alike to the practical surgeon, and to the philosophical anatomist. Looked upon, therefore, in this light, we cannot help agreeing with the author, that the framework of the human system deserves a more minute investigation, and a more careful study than is usually bestowed upon it.

We do not intend in our brief space to enter upon any very critical examination of Mr. Humphry's somewhat voluminous work; our object is rather to draw attention to the manner in which the author himself has considered his subject, leaving to those of our readers who may be more particularly interested in the matter, the task of passing in detail the various topics considered in the book before us.

The earlier pages of the work are devoted principally to general observations upon the skeleton, including the chemical composition, the shape, structure, and physical characteristics of bones, their development and mode of growth; the nature and uses of the periosteum, and the peculiarities of the senile skeleton. Into the latter topic Mr. Humphry enters at some length, and furnishes us with much valuable information relative to the changes which occur in bones during the advanced periods of life.

It has always been a prevalent opinion, that the proportion of the earthy constituents of the bones gradually increased with increasing age, and that the change of structure in bone thus brought about, acted as one of the most powerful predisposing causes of fracture in the aged. The various statements, however, upon this subject, have been conflicting in the extreme, and the only certain result arrived at by our author, is that "the bones of the aged differ a good deal in different individuals."

This want of uniformity in the characters of the bones of old people is probably to be explained by the constantly varying relations of absorption and deposit. In one class of cases, these processes being nearly balanced, but little alteration, save in the enlarged condition of the cancelli results; in other instances the bony deposit may exceed the process of absorption, so that the bone may become absolutely increased in weight, hardness, and solidity. The third and most numerous class of persons are those in whom the absorption goes on with greater rapidity than the deposit, producing that brittle condition of the bones already alluded to. Be the explanation of the fact what it may, it seems certain, however, that in many cases the earthy constituents are not relatively increased, a circumstance sufficiently proven by the experiments of Stark and Von Bibra, who found that the chemical constituents of old, and of adult bone are often relatively the same.

Were we about to point out any portion of Mr. Humphry's work, which possessed peculiar interest, we would unhesitatingly lay our finger upon those pages occupied with the consideration of the joints. The examination of these parts has evidently been conducted by the author with the most rigid scrutiny, and the reader is presented with many anatomical facts which are not frequently alluded to. Such for example are the remarks upon the influence of atmospheric pressure on the joints, especially the ball and socket-joints; the fact that the bones are in no instance held together by their shape alone; that the retention of the articular surfaces of the joints in apposition depends entirely upon the ligaments and surrounding soft parts; and that the movements of the joints are under no circumstances arrested or limited by the shape of the bones, or by the contact of their edges. The checking of the movements in every articulation is produced either by the tension of the ligaments, or by the pressure of the soft parts; this can be clearly seen by examining the elbow-joint, in which, although the coronoid and olecranon processes enter, during flexion and extension their respective fossæ, yet they are never permitted quite to reach the bottom of these cavities. All jarring shock to the limb is thus prevented, and the movements of the joint are executed with safety and precision.

The much vexed topic of the structure of articular cartilage is closely examined by Mr. Humphry. He believes it to be non-vascular, and that only in morbid conditions have vessels ever been traced into it. The effect of disease upon this structure is also alluded to, and we are told "It is worthy of remark in a practical point of view, how quickly the muscles that act upon the joint fall away when disease attacks its cartilages. A year of simple synovial disease will not produce so much effect upon the adjacent muscles as a month or even a week of ulceration of the cartilages. Hence this wasting of the muscles becomes a symptom of great importance in assisting us to arrive at a diagnosis as to which of these two structures is involved, as well as in enabling us to decide whether disease, which commenced in the synovial membrane, has extended to the cartilages"—p. 77.

In the chapter upon the proportions of the human figure, we find many curious analogies. One of these we subjoin, as to some of our readers it may be novel and interesting.

When speaking of the relative size of the head and trunk of the body, our

author informs us that the great modern artists have been in the habit of making the head about one-eighth part, and the face about one-tenth of the whole figure, giving to the lower extremities one-half the length of the body, and to the extended arms, the same distance as from the sole to the crown. He then adds : " In like manner the height of the columns in the various styles of architecture, and the dimensions of their capitals were regulated in certain definite proportions to the diameter of the several columns. The radius of the base was usually taken as the standard of measurement, and called the "module." Thus the Tuscan column measured 16 modules, the Ionic 18, and the Corinthian 20. Gradually, as the science of architecture made progress, the columns were rendered lighter and more graceful, and it is interesting to observe that the several parts were elongated, until the column, with its capital and base, acquired nearly the proportions of the human frame. Considering the capital as in the place of the head, the whole length of a Corinthian pillar is eight and a half heads." The "module" or standard proposed by Carus for estimating the comparative proportions of the human figure is one-third of the length of the spinal column, and with this ratio of measurement, the various portions of the body have been found to correspond in a remarkable manner.

Passing from the subject of general considerations, our author next takes up the anatomy of the various bones, commencing with the vertebræ and the spinal column. A point of interest connected with this latter is the position of the so-called "weak-points." The first of these is the junction of the dorsal with the lumbar portion of the column. The reasons for the existence of this weak point are stated by Mr. Humphry to be, that although it has to bear nearly as great a weight as the part of the column below it, its vertebræ are proportionately small; then its transverse and spinous processes are short; and again it is near the centre of the spinal column, and subjected to a great length of leverage. Lastly, he observes, that the component parts of the spinal column, both above and below, are comparatively fixtured, so that all movements are transmitted to and felt at the point in question, producing that disagreeable jar, or shock, or, as it is commonly termed, a strain in the back, so frequently experienced as the consequence of a misstep. Another weak point is found at the dorsal curve; here is the usual seat of angular curvature, the result of absorption or ulceration of the bodies of the middle dorsal vertebræ. The senile curvature, so frequently the accompaniment of old age, is produced by the gradual weakening of the various dorsal ligaments, and the resulting absorption of the foreparts of the bodies of the vertebræ.

The description of the individual bones of the head forms a long and well written chapter of the work; the tediousness incidental to such minute description being well relieved by the interspersion of practical physiological and pathological facts. Especially is this the case where the author is treating of the various sinuses of the skull, and the meatuses of the nose.

At page 301, we have introduced to our notice a new ligament, the short internal lateral ligament of the temporo-maxillary articulation. This ligament, which, according to Mr. Humphry, has escaped the attention of anatomists, arises immediately underneath the long internal ligament, and passes to be inserted upon the ridge leading from the inner extremity of the condyle, and immediately behind the insertion of the external pterygoid muscle. At page 327, when treating of the imperfections of the sternum, the case of M. Groux, so familiar to many of our readers, is referred to. Clefts in the sternum are, we are told, more frequently met with in the lower than in the upper portion of the bone, a fact in accordance with the mode of closure of the thoracic cavity of the fetus. A point of interest in the case above referred to, is the existence of the soft parts over the sternum; since it most frequently happens in cases of congenital fissure of this bone, that the skin and tissues which should cover it, are also deficient.

The mode in which the movements of inspiration and expiration are effected, are minutely discussed, and the relations of the thoracic walls to each other during these acts are illustrated by a series of diagrams. The remaining portions of the volume are occupied with the study of the bones of the extremities, and frequent and apt allusions are made to the injuries to which these parts and

those adjacent are subject, as fractures, dislocations, and injury or rupture of the surrounding muscles. The ligaments of the shoulder, and hip-joint, have received, as their importance well warrants, a full share of our author's attention, and we do not remember to have elsewhere seen a more truthful or more accurate description of the former than has been afforded us by Mr. Humphry.

In bringing our brief notice of this very admirable volume to a close, we cannot but express the satisfaction we have derived from the perusal of many of its pages. The book issued from a Cambridge press is essentially a volume of luxury, and is, we believe, the most voluminous treatise on the anatomy of the skeleton yet published. The only recent treatise with which it can be well compared is that of Mr. Holden; this latter, however, is confined simply to the description of the bones, and does not, we think, include the examination of the joints. The plates, however, in Mr. Holden's work, are superior to those of the volume we have just noticed. Indeed, it had been our intention to advert more strongly to the character of Mr. Humphry's illustrations, but as we are told in the preface, that the artist is the author's wife, gallantry forbids us so to do. We doubt not, that should the work in question ever reach a second edition, many alterations in the engravings will have suggested themselves to the author.

J. H. B.

ART. XXI.—*The Microscope in its application to Practical Medicine.* By LIONEL S. BEALE, M.B., F.R.S., Professor of Physiology and General and Morbid Anatomy in King's College. 2d edition, 8vo.: London, 1858.

THE physician who at the present day decries the use of the microscope, and tauntingly asks what it has accomplished for practical medicine, is possessed of a degree of boldness, which, resulting as it does from ignorance and prejudice, is not entitled to the respect which ordinarily is accorded to this element of character. And yet, notwithstanding the thousand evidences that a material portion of our recent progress in medicine is due to this instrument, we find those (many of them occupying high positions in the profession) who with an obstinacy worthy of a better cause refuse to be enlightened, and are content to grope their way in the venerated darkness of the past. No arguments reach them, no evidence convinces them, no inducements persuade them. But thus it has always been with every important discovery. Harvey was ridiculed and persecuted, and in the time of Galileo there were not wanting those who could see more stars with the naked eye than with a telescope. We smile now at such recollections, and those who decry the microscope smile with us, little dreaming that the time is at hand when they will be classed with the opponents of the telescope, the steam engine, the magnetic telegraph, and other great works which have triumphed in spite of opposition.

It would of course be foreign to our purpose were we in this place to refer in detail to the long list of valuable discoveries which medical science has received through microscopical investigation. They are to be found in the standard works on anatomy, physiology, pathology, and that science of microscopical creation—histology.

But although the microscope has done much for our profession, there is still a great deal for it to accomplish; and, therefore, we hail with pleasure the appearance of every work calculated to lighten the labour of investigation, and to instruct those desirous of devoting themselves to the task of elucidating subjects as yet imperfectly understood.

This volume of Dr. Beale's must undoubtedly prove useful to those engaged in microscopical observations. The author is so earnest, so thoroughly imbued with love for the subjects of his scientific labours, that with his experience he could not fail to produce a work useful to those following kindred pursuits. It is also decidedly superior in every respect to the first edition, in which all reference to several important subjects was omitted.

In using the microscope there are so many precautions to be taken, so many causes of misinterpretation to be avoided, that the greatest care should be